Conclusions - Action items

ALL

CDF/D0/AD luminosity meeting of August 1, 2007

Conclusions - Action Items

- The CDF/D0 initial luminosity ratio has been studied in the period Oct. 2006 – July 2007. It has seen excursions of the order of 5-10% since May 2007 (on May 3rd, we started the process of implementing the new chromaticity correction sextupoles at the Tevatron). During the period studied, CDF online calibration changes (raising the CDF luminosity) between 1-4 % have taken place on Dec. 6 2006, January 28 2006, March 13 2007, May 14 2007, June 20 2007 and June 29 2007. The end of store CDF/D0 luminosity profile is similar to the one for initial luminosities but smoother. The CDF/D0 initial luminosity ratio does not exhibit any obvious dependence on luminosity. The CDF/D0 measured luminosities are currently approximately 10-12% below the “expected” luminosities which assume the same 980 GeV lattice since Dec. 2005. In Febr. 2007 they were ~5% below.

Conclusions - Action Items

- **The D0 luminosity system behaves stably during Run IIb. They observe radiation damage to the scintillators (~1% effect on luminosity measurement) and they plan to replace all scintillators during the shutdown. Forward muon yields show stability of the system within 1% during Run IIb.**

Conclusions – Action items

- CDF finds good linearity dependence between the luminosity measurement and the currents of the central outer tracker using data including high luminosity stores (a few stores with initial luminosities greater than 280 E30). During the shutdown they expect to replace (as in every shutdown) aging phototubes.

Conclusions - Action Items

- Optics measurements performed by the Tevatron group using the “differential orbit” method in proton-only studies on July 16, 2007 (10-15% accuracy) indicate that β^*_x was 38.6 at CDF and 33.5 cm at D0 and β^*_y was 43.3 at CDF and 40.8 cm at D0 with the new sextupoles ON. This represented a significant increase from similar measurements in June 2006 (~12% for D0 and ~25% for CDF). A new lattice was implemented in store 5577, on July 24, 2007. According to the model, β^*_x is expected to be 35.3 at CDF and 27.2 cm at D0 and β^*_y is expected to be 34.1 at CDF and 29.7 cm at D0.

Conclusions – Action items

- Both CDF and D0 presented measurements of their luminous regions (beam positions and beam widths) using recent data, with the new sextupoles ON, and compared them with similar earlier measurements. Neither CDF nor D0 see in their beta* measurements the significant change in beta* that the Tevatron lattice measurements indicate. This is puzzling and we would like to follow up and try to understand it.

Conclusions – Action items

- It would be very helpful to include in the studies CDF offline data beyond the end of March 2007.
- It would be also very helpful that both experiments produce beta* measurements for data taken after the most recent lattice change, that is stores 5577-5592.
- When we have these new beta* measurements, it would be very instructive to see how well they correlate with the observed luminosity changes at CDF and D0 after store 5577.

Conclusions – Action items

- We are aiming to have the next joint meeting sometime in November 2007, after we have a couple of weeks of running.